

CLAIMS

What is claimed:

1. Drive system for a motor vehicle, comprising:
 - a combustion engine with a crankshaft;
 - an electric machine designed as a starter, generator, or starter-generator, and seated on the crankshaft of the combustion engine or an extension of the crankshaft, wherein the electric machine is a polyphase machine;
 - a polyphase power electronics unit for the electric machine;
 - wherein the power electronics unit is located at the combustion engine in a radially and axially offset direction to the electric machine; and
 - wherein the electric machine and the power electronics unit are electrically connected by means of rigid electric conductors.
2. The drive system of claim 1, wherein:
 - the combustion engine presents mounting points suitable for mounting a conventional ring gear shift lever starter; and
 - wherein the power electronics unit is mounted on the mounting points.
3. The drive system of claim 1, wherein the exterior dimensions of the power electronics unit are approximately 2 to 1 to 1 (L:W:H).

4. The drive system of claim 1, wherein the electric machine comprises a polyphase winding with coils, wherein said coils are connected with rotating power loops, and wherein said power loops comprise connections, which are directly and rigidly connected with low tension sides of the power electronics unit.
5. The drive system of claim 4, wherein the connections are designed as shank-like extensions of the power loops, and are at a distance and in a square deviation in the rotational direction of the power loops.
6. The drive system of claim 4, wherein the power electronics unit comprises a longitudinal axle, and the power loops present a radius, and the longitudinal axle is co-axially aligned with the crankshaft axle, and the distance between said longitudinal axle and the crankshaft axle corresponds approximately with the radius of the power loops.
7. The drive system of claim 4, wherein the rigid electric connections connecting the electric machine and the power electronics unit run co-axially to the crankshaft axle and perpendicular against the power loops or the power loop connections.
8. The drive system of claim 1, wherein the power electronics unit comprises an enclosure providing electromagnetic shielding between the area of the electric connections and the electric machine.

9. The drive system of claim 1, comprising a coolant circuit cooling the combustion engine, and wherein the power electronics unit and the electric machine are connected with the cooling circuit of the combustion engine for cooling purposes.

10. The drive system of claim 9, wherein the power electronics unit and the electric machine are connected in series in the cooling circuit.

11. The drive system of claim 10, wherein a flow direction of the coolant means is indicated in the cooling circuit, and wherein the power electronics unit is placed first and followed by the electric machine in the connection in series of the power electronics unit and the electric machine.

12. Drive system of a motor vehicle, comprising:
a combustion engine with a crankshaft;
an electric machine designed as a starter, generator, or starter-generator, and seated on the crankshaft of the combustion engine or an extension of the crankshaft, wherein the electric machine presents a winding with coils connected with the rotating power loops;
a power electronics unit with low tension sides to the electric machine; and

wherein the low tension sides of the power electronics unit are electrically connected with the power loops by means of rigid electric conductors.

13. The drive system of claim 12, wherein:

the combustion engine presents mounting points suitable for mounting a conventional ring gear shift lever starter; and
wherein the power electronics unit is mounted to the mounted points.

14. The drive system of claim 12, wherein the exterior dimensions of the power electronics unit are in a ratio of 2 to 1 to 1 (L:W:H).

15. The drive system of claim 12, wherein the power loops provided for the connection of the conductor lines to the power electronics unit comprise shank-like extensions extending in a square deviation in the rotational direction of the power loops.

16. The drive system of claim 12, wherein the power electronics unit presents a longitudinal axle and the power loops a radius, and wherein said longitudinal axle is arranged co-axially to the crankshaft axle, and the distance between the longitudinal axle and the crankshaft axle corresponds approximately with the radius of the power loops.

17. The drive system of claim 12, wherein the electric machine and the power electronics unit are connected by means of rigid electric lines running co-axially to the crankshaft axle and perpendicular against the power loops or the power loop connections.

18. The drive system of claim 12, comprising a cooling circuit for cooling the combustion engine, and wherein the power electronics unit and the electric machine are connected with the cooling circuit of the combustion engine for the purpose of cooling.

19. Drive system of a motor vehicle, comprising:

a combustion engine with a crankshaft, wherein the combustion engine presents mounting points and a mounting area suitable for mounting and arranging a conventional ring gear shift lever starter;

an electric machine designed as a starter, or starter-generator, and seated on the crankshaft of the combustion engine or an extension of the combustion engine;

a power electronics for the electric machine;

wherein the power electronics unit is mounted to said mounting points and arranged in said mounting area.

20. The drive system of claim 19, wherein the exterior dimensions of the power electronics unit are in a ratio of 2 to 1 to 1 (L:W:H).

21. The drive system of claim 19, wherein the electric machine and the power electronics unit are electrically connected by means of rigid electric lines.
22. The drive system of claim 21, wherein the electric machine comprises a polyphase winding having coils connected to the rotating power loops and rigidly connected with the low-tension sides of the power electronics unit.
23. The drive system of claim 22, wherein the power loops present shank-like extensions for the purpose of connecting the connection lines with the power electronics unit, and wherein said extension extends squarely to the rotational direction of the power loops.
24. The drive system of claim 22, wherein the power electronics unit presents a longitudinal axle and the power loops a radius, and wherein said longitudinal axle is arranged co-axially to the crankshaft, and the distance between said longitudinal axle and the crankshaft axle corresponds approximately with the radius of the power loops.
25. The drive system of claim 22, wherein the electric machine and the power electronics unit are connected by means of rigid electric lines running co-axially to

the crankshaft axle and perpendicular against the power loops or the extensions of the power loops.

26. The drive system of claim 19, comprising a cooling circuit for cooling the combustion engine, and wherein the power electronics unit and the electric machine are connected with the cooling circuit of the combustion engine for the purpose of cooling.